

## Occupational Safety Competency 4.2

---

**Competency 4.2** Occupational safety personnel shall demonstrate the ability to perform occupational safety trend analyses.

### 1. Supporting Knowledge and Skills

- a. Discuss the key processes used in the trending and analysis of operations and post-operation activities information and its relationship to occupational safety activities.
- b. Using an actual list of performance indicators, determine what type of assessment should be performed and in what areas.
- c. Given a set of incident/occurrence report data for a specified period, analyze the information for safety trends or compliance problems.

### 2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	<a href="http://wastenot.inel.gov/cted/stdguido.html">http://wastenot.inel.gov/cted/stdguido.html</a>	DOE Standards, Guides, and Orders
OSHA	<a href="http://www.osha-slc.gov/">http://www.osha-slc.gov/</a>	OSHA documents and search engine
U.S. House of Representatives	<a href="http://law.house.gov/cfr.htm">http://law.house.gov/cfr.htm</a>	Searchable Code of Federal Regulations

**Read** paragraph 7 of DOE 5480.26, *Trending and Analysis of Operations Information Using Performance Indicators*, and paragraphs 1 through 6 and Appendices 2 and 5 of DOE-STD-1048-92, *DOE Performance Indicators Guidance Document*.

**EXERCISE 4.2-A** Referring to paragraph 7 of DOE 5480.26, *Trending and Analysis of Operations Information Using Performance Indicators*, how often is the contractor's performance indicator report to be submitted to DOE?

## Occupational Safety Competency 4.2

---

- EXERCISE 4.2-B Referring to Appendix 2 of DOE-STD-1048-92, *DOE Performance Indicators Guidance Document*, which of the required performance indicators relate to occupational safety?
- EXERCISE 4.2-C Referring to paragraph 7 of DOE 5480.26 and paragraph 6 of DOE-STD-1048-92, describe the general responsibilities for facility managers and DOE line management for trending and analyzing performance indicators and other operational information.
- EXERCISE 4.2-D Referring to paragraph 7 of DOE 5480.26 and paragraph 6 and Appendix 5 of DOE-STD-1048-92, describe the process (or methods) used to trend and analyze performance indicators and other operational information.
- EXERCISE 4.2-E With your supervisor, obtain a contractor's performance indicator report for the last quarter and determine for each indicator: (1) whether you need to investigate any identified issues, and (2) what particular approach you will take to investigate these issues or indicators further (e.g., using interviews, observations, or document reviews and walk-downs).
- EXERCISE 4.2-F Using contractor occurrence reports for the past 12 months, analyze and trend key (that you and your supervisor identify) safety performance data, applying the methods shown in Appendix 5 of DOE-STD-1048-92. Show your results to your supervisor.

### 3. Summary

#### **(From *Fundamentals of Industrial Hygiene*)**

The degree of health hazard to an individual arising from exposure to environmental factors or stresses depends on four factors: (1) the nature of the environmental factor or stress, (2) the level of exposure, (3) the duration of exposure, and (4) individual susceptibility. After a list of chemicals and physical agents to which employees are exposed has been prepared, it is necessary to determine which of the environmental factors or stresses may result in hazardous exposures and need further evaluation.

## Occupational Safety Competency 4.2

---

Valuable information can be obtained by observing the manner in which health hazards are generated, and control measures are used and by determining the number of people involved. The kind of provisions that must be installed to protect against health hazards will vary from plant to plant, from one toxic material to another, and from process to process.

Experience, discussion with others in the field, and a thorough knowledge of the effects of exposure to a particular chemical or physical agent arising out of manufacturing operations are required to properly evaluate the hazards arising out of the industrial environment. This information, coupled with the trending and analysis of critical occupational safety, industrial hygiene, and employee medical data can result in early identification and prevention of serious injuries and illnesses.

The general methodology for trending and analyzing such data combines numerical methods to organize the data with engineering management knowledge and insights concerning the process operations. This approach is outlined in DOE-STD-1048-92, *DOE Performance Indicators Guidance Document*.

### 4. Exercise Solutions

EXERCISE 4.2-A Referring to paragraph 7 of DOE 5480.26, *Trending and Analysis of Operations Information Using Performance Indicators*, how often is the contractor's performance indicator report to be submitted to DOE?

ANSWER 4.2-A Quarterly.

EXERCISE 4.2-B Referring to Appendix 2 of DOE-STD-1048-92, *DOE Performance Indicators Guidance Document*, which of the required performance indicators relate to occupational safety?

ANSWER 4.2-B (Either answer is correct.)

In a general sense, all relate (or can relate) to occupational safety.

More directly, the personnel safety indicators 1.1 through 1.6, substance abuse incidents (2.5), environment indicator 3.3, and OSH noncompliance indicator 4.3.

## Occupational Safety Competency 4.2

---

**EXERCISE 4.2-C** Referring to paragraph 7 of DOE 5480.26 and paragraph 6 of DOE-STD-1048-92, describe the general responsibilities for facility managers and DOE line management for trending and analyzing performance indicators and other operational information.

**ANSWER 4.2-C** Facility managers are required to assess their facility operating information for trends and indications of deteriorating or improving conditions, and to identify lessons-learned and good practices in order to prevent problems and improve safety and operations. Similarly, DOE line management is required to trend and analyze operational information to provide feedback to the contractor.

**EXERCISE 4.2-D** Referring to paragraph 7 of DOE 5480.26 and paragraph 6 and Appendix 5 of DOE-STD-1048-92, describe the process (or methods) used to trend and analyze performance indicators and other operational information.

**ANSWER 4.2-D** The general methodology for trending and analyzing DOE and contractor performance data combines simple and descriptive statistical methods to organize the data with engineering management knowledge and insights concerning process operations. This approach entails the use of control charts, count charts, X-charts, U-charts, distribution charts, and standard data evaluation and analysis techniques.

**EXERCISE 4.2-E** With your supervisor, obtain a contractor's performance indicator report for the last quarter and determine for each indicator: (1) whether you need to investigate any identified issues, and (2) what particular approach you will take to investigate these issues or indicators further (e.g., using interviews, observations, or document reviews and walk-downs).

## Occupational Safety Competency 4.2

---

ANSWER 4.2-E      Sample checklist shown here.

Follow-Up Assessment of Contractor Performance Indicators		
Indicator	Investigate? (Y/N)	Approach To Be Used
Collective Radiation Dose		
Skin/Clothing Contaminations		
Internal Contaminations		
Radioactive/Hazardous Material Overexposure		
Lost Work Day Case Rate		
Substance Abuse Incidents		
Environmental Incidents		
OSH Noncompliance		

EXERCISE 4.2-F      Using contractor occurrence reports for the past 12 months, analyze and trend key (that you and your supervisor identify) safety performance data, applying the methods shown in Appendix 5 of DOE-STD-1048-92. Show your results to your supervisor.

ANSWER 4.2-F      None required.